

LAID-OPEN PATENT GAZETTE, JAPANESE PATENT OFFICE (JP)(A)

Laid-Open Number: 2001/010,925

Laid-Open Date: 16 January 2001

Application Number: 11/181,597

Application Date: 28 June 1999

Int. Cl. 7: A 61 K 7/00, 7/48, 9/10, 31/00, 31/045, 47/10

Inventors: Yoshihito Seto, Yasuhiro Fukuda,
Masahiro Torihara and Yoshin Tamai

Applicants: Pola Chemical Industry Co., Ltd.
6-48 Yayoicho, Shizuoka-shi, Shizuoka-ken
and
Kuraray Co., Ltd.

1621 Sakatsu, Kurashiki-shi, Okayama-ken
Representatives: Tsutomu Toyama, Patent Attorney
and two more

EMULSIFIED COMPOSITION

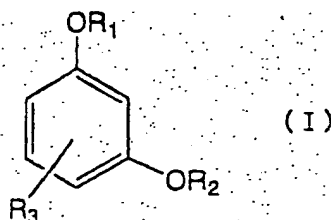
Abstract:

[Matters to Solve]

An object of the present invention is to provide a preparation containing a resorcinol derivative which is suitable as a cosmetic or a medicament for external application to the skin and has a sufficient stability.

[Solving Means]

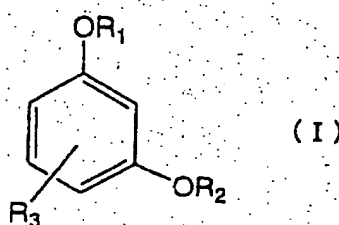
The present invention is an emulsified composition which is characterized in containing a high-molecular substance with an average molecular weight of 1,000,000 to 3,000,000 having a side chain of an alkyl group with 10 to 30 carbons and a resorcinol derivative represented by the following formula (I).



(in the formula, R_1 and R_2 each independently is hydrogen atom, an acyl group having 1~4 carbon(s), an alkyl group having 1~4 carbon(s), mesyl group or tosyl group; and R_3 is an alkyl group or hydrogen atom)

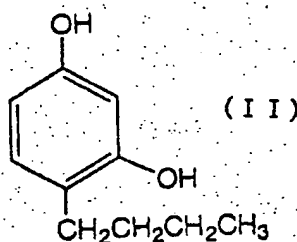
What is Claimed is:

1. An emulsified composition which is characterized in containing a high-molecular substance with an average molecular weight of 1,000,000 to 3,000,000 having a side chain of an alkyl group where carbon numbers are 10 to 30 and a resorcinol derivative represented by the following formula (I).



(in the formula, R_1 and R_2 each independently is hydrogen atom, an acyl group having 1~4 carbon(s), an alkyl group having 1~4 carbon(s), mesyl group or tosyl group; and R_3 is an alkyl group or hydrogen atom)

2. The emulsified composition according to claim 1, wherein the resorcinol derivative is 4-n-butylresorcinol represented by the formula (II) and/or a salt thereof.



3. The emulsified composition according to claim 1 or 2, wherein the high-molecular substance where the side chain has an alkyl group is an alkyl acrylate/methacrylate copolymer and/or a salt thereof.
4. The emulsified composition according to any of claims 1 to 3, wherein the composition does not contain a nonionic surface-active agent.
5. The emulsified composition according to any of claims 1 to 4, wherein the composition is an agent for external use to the skin.

6. The emulsified composition according to any of claims 1 to 5, wherein the composition is a cosmetic.

Detailed Description of the Invention:

[0001]

[Technical Field to which the Invention Belongs]

The present invention relates to an emulsified composition which is useful as a cosmetic or a substrate material for medicament.

[0002]

[Prior Art]

A resorcinol derivative has an inhibitory action for the production of melanin and an antibacterial action and also has a good stability whereby it is useful as an effective ingredient for an agent for external application to the skin such as a cosmetic and a medicament for external application to the skin. However, percutaneous absorption of a cosmetic, etc. containing a resorcinol is not always sufficient. Accordingly, there has been demanded an improvement in a subcutaneous absorption by means of a preparation using a convenient compounding system for enhancing the above-mentioned effective action of the resorcinol derivative.

[0003]

In a system of an emulsified composition which is used for a cosmetic or a substrate material for medicament, its emulsified property is stabilized usually by the use of a nonionic surface-active agent but, in view of safety, it is preferred to stabilize without the use of a nonionic surface-active agent. Therefore, there has been a demand for the development of a preparation containing a resorcinol derivative which does not contain a nonionic surface-active agent and has a sufficient stability. However, in the emulsification under the condition of containing no nonionic surface-active agent, it is difficult to prepare a stable emulsified composition. In addition, viscosity of the resulting composition becomes high and, therefore, there is a problem in actual use that the spreading upon use becomes heavy.

[0004]:

On the other hand, a high-molecular substance having an average molecular weight of 1,000,000 to 3,000,000 where an alkyl group having 10 to 30 carbons is a side chain has been available in the market as a thickener having an emulsifying action. However, it has not been known to use the said substance in an emulsified composition together with a resorcinol derivative and also to form a stable emulsified system even without a nonionic surface-active agent.

[0005]

[Problem that the Invention is to Solve]

The present invention has been carried out under such circumstances and its object is to provide a preparation containing no nonionic surface-active agent and having a sufficient stability which is suitable for a cosmetic or a medicament for external application to the skin containing a resorcinol derivative such as 4-n-butylresorcinol.

[0006]

[Means for Solving the Problems]

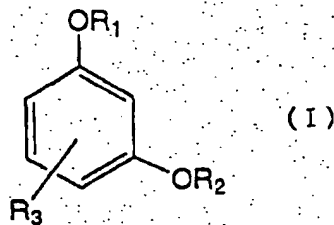
In view of the above, the present inventors have conducted intensive investigations repeatedly for finding a preparation having a sufficient stability and, preferably, containing no nonionic surface-active agent which is suitable for a cosmetic or a medicament for external application to the skin containing a resorcinol derivative and found that an emulsified composition characterized in containing a high-molecular substance having an alkyl group on its side chain has such a characteristic whereupon the present invention has been achieved.

[0007]

Thus, the present invention relates to an emulsified composition which is characterized in containing a high-molecular substance with an average molecular weight of 1,000,000 to 3,000,000 having a side chain where carbon numbers are 10 to 30 and a resorcinol derivative represented by the

following formula (I).

[0008]

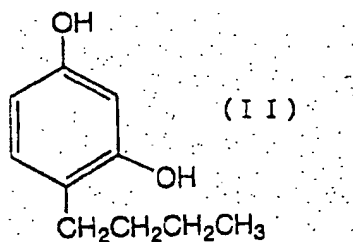


(in the formula, R_1 and R_2 each independently is hydrogen atom, an acyl group having 1~4 carbon(s), an alkyl group having 1~4 carbon(s), mesyl group or tosyl group; and R_3 is an alkyl group or hydrogen atom)

[0009]

It is preferred that the said resorcinol derivative is 4-n-butylresorcinol represented by the formula (II) and/or a salt thereof.

[0010]



[0011]

It is preferred that the high-molecular substance where the side chain has alkyl group is an alkyl acrylate/methacrylate copolymer and/or a salt thereof.

[0012]

The present invention also relates to the emulsified composition according to the above, wherein the composition does not contain a nonionic surface-active agent.

[0013]

The emulsified composition of the present invention is also suitable for use as an agent for external use to the skin and as a cosmetic as well.

[0014]

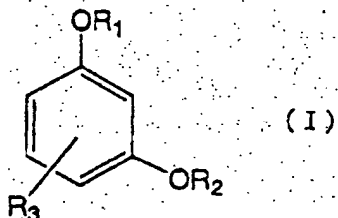
[Embodiments of the Invention]

As hereunder, detailed illustration will be mentioned mainly in terms of embodiments of the present invention. The present invention is an emulsified composition which is characterized in containing a resorcinol derivatives and a high-molecular substance which has an alkyl group on its side chain. Firstly, an illustration will be made for the resorcinol derivative.

(1) Resorcinol derivative

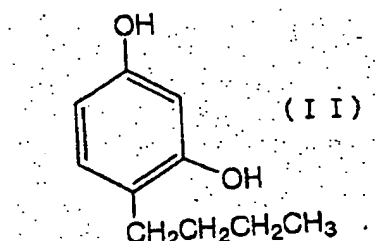
The emulsified composition of the present invention contains a resorcinol derivative. The resorcinol derivative of the present invention means a 1,3-dihydroxyphenol derivative represented by the formula (I) and/or a physiologically acceptable salt thereof and, preferably, it means alkylresorcinol and/or a physiologically acceptable salt thereof.

[0015]



In the formula, the alkyl group is an alkyl group having a linear, branched or cyclic structure where the carbon numbers are about 4 to 7 and is preferably bonded to 4-position of a benzene ring. Particularly preferred alkyl group is butyl group bonded to 4-position. Thus, it is 4-n-butylresorcinol represented by the following formula (II) and/or a salt thereof. It/they has/have a physiologically active action such as an excellent action for the suppression of melanin production or, in other words, a whitening action and an antibacterial action, etc.

[0016]



(in the formula, R_1 and R_2 each independently is hydrogen atom, an acyl group having 1~4 carbon(s), an alkyl group having 1~4 carbon(s), mesyl group (methanesulfonyl group) or tosyl (p-toluenesulfonyl) group; and R_3 is an alkyl group or hydrogen atom)

[0017]

Incidentally, the alkylresorcinol represented by the formula (I) is an already-known substance and its manufacturing method has been known already as well (refer, for example, to Japanese Patent Laid-Open No. 02/49,715). Thus, the said resorcinol may be easily prepared by a method where resorcinol is fused with a saturated carboxylic acid in the presence of zinc chloride and the resulting condensate is reduced with amalgam/hydrochloric acid (refer to Lille, J., Bitter L. A., Peiner, V., Tr. Nauch - Iasled. Inst. slantsev, 1969, No. 18, 127) or by a method where resorcinol is made to react with the corresponding alkyl alcohol using an alumina catalyst at the temperature of as high as 200~400°C (refer, for example, to British Patent No. 1,581,428), etc.

[0018]

With regard to a salt, there will be no particular limitation so far as it is physiologically acceptable and its appropriate examples are alkaline metal salt such as sodium salt and potassium salt; alkaline earth metal salt such as calcium salt and magnesium salt; organic amine salt such as ammonium salt, triethanolamine salt and triethylamine salt; and basic amino acid salt such as lysine salt and arginine salt. Among the above, particularly preferred one is an alkaline metal salt and, among those, especially preferred one is a potassium salt.

[0019]

The preferred amount of the resorcinol derivative in the emulsified composition of the present invention is 0.01~10% by weight and, more preferably, 0.05~5% by weight.

[0020]

(2) High-molecular substance having an alkyl group on the side chain

The emulsified composition of the present invention contains a high molecular substance having an alkyl group on the side chain. This is because, when emulsification is carried out using the said high-molecular substance in a combination of the above-mentioned resorcinol derivative with an ether comprising polyhydric alcohol and unsaturated alcohol, it is possible to suppress the detachment of a cosmetic so that the acting time can be made longer. With regard to the said alkyl group, an alkyl group having many carbons is preferred, having 8~34 carbons is more preferred and having 10~30 carbons is particularly preferred. The average molecular weight of the said high-molecular substance is preferably 100,000~3,000,000 and particularly preferably 1,000,000~3,000,000. With regard to such a high-molecular substance, preferred examples are polymer (homopolymer) and/or copolymer where one or more member(s) selected from acrylic acid and alkyl ester or alkylamide thereof, methacrylic acid and alkyl ester or alkylamide thereof, acylated vinyl alcohol and alkyl ether thereof, styrene and α -alkylstyrene is/are constituting monomer(s). Among the above, a copolymer of alkyl acrylate with methacrylate and/or a salt thereof may be particularly preferably exemplified. Such a high-molecular substance may be prepared according to a conventional method in such a manner that acrylic acid or methacrylic acid is converted to a chloride using thionyl chloride or the like and then made to react with alcohol, alkylamine or the like in the presence of an alkali and the resulting constituting monomer is polymerized. It is of course also possible to use the commercially available ones.

[0021]

Preferred examples of such commercially available ones are alkyl acrylate-methacrylate copolymers (carbon numbers of the alkyl group are 10~30) and/or salt thereof being solid from Goodrich under the trade names

of Pemrene TR-1 and Pemrene TR-2. With regard to the salt here, any salt may be used so far as it is physiologically acceptable and its preferred examples are alkaline metal salt such as sodium salt and potassium salt; alkaline earth metal salt such as calcium salt and magnesium salt; organic amine salt such as ammonium salt, triethylamine salt and triethanolamine salt; and basic amino acid salt such as lysine salt and arginine salt. Among those, the most preferred one is an alkaline metal salt.

[0022]

Such a high-molecular substance having an alkyl group on its side chain may be used solely or two or more thereof may be used jointly. The preferred amount of such a high-molecular substance having an alkyl group on its side chain in the emulsified composition of the present invention is 0.01~2% by weight and, more preferably, 0.05~1% by weight. When the amount is too much, the product may become too thick while, when it is too small, a stabilizing action may not be achieved.

[0023]

(3) Emulsified composition of the present invention

The emulsified composition of the present invention contains the above-mentioned resorcinol derivative and a high-molecular substance having an alkyl group on its side chain and/or a salt thereof. In addition to the above-mentioned ones, the emulsified composition of the present invention contains substrate components which are commonly used for the formation of emulsified compositions in the field where the emulsified composition is used such as cosmetics and medicaments for external application such as to the skin. The substrate component includes aqueous component, oily component, emulsifier, etc. Examples of the substrate component are water, etc. as the aqueous component while, as the oily component, they are hydrocarbon such as Vaseline and microcrystalline wax; ester such as jojoba oil and whale wax; triglyceride such as beef tallow and olive oil; higher alcohol such as cetanol and oleyl alcohol; fatty acid such as stearic acid and oleic acid; and polyhydric alcohol such as glycerol and 3-butanediol. With regard to the emulsifier, there is no particular limitation but various kinds of surface-active agents may be used. Examples of the surface-active agent are anionic surface-active agent, nonionic surface-active agent and amphoteric surface-active agent.

Preferred surface-active agents among those are natural ones such as lecithin, sucrose fatty acid ester, casein salt, sphingolipid, glycyrrhizinic acid and salt thereof, hydrolyzed elastin, hydrolyzed collagen, N-acylglutamate, pectin, xanthan gum, locust bean gum and karaya gum.

[0024]

Although nonionic surface-active agent may be used in the emulsified composition of the present invention, it is preferred not to use nonionic surface-active agent in view of safety. In accordance with the present invention where the above-mentioned high-molecular substance having an alkyl group on its side chain and/or its salt are/is contained, it is possible to prepare an emulsified composition having a good stability even when no nonionic surface-active agent is used. Incidentally, examples of the nonionic surface-active agent are polyoxyethylene fatty acid ester, polyoxyethylene sorbitan fatty acid ester, polyoxyethylene alkyl ether, polyoxypropylene alkyl ether, polyoxyethylene polyoxypropylene alkyl ether and polyglycerol fatty acid ester. When an emulsion is prepared under the condition containing no nonionic surface-active agent in order to produce an emulsified preparation of a high safety in a commonly-known emulsified composition system, there is a tendency that viscosity of the emulsified composition becomes high and accordingly that the spread in actual becomes heavy. In the emulsified composition of the present invention however, it is possible to give a preparation having a high stability even when the viscosity is as low as 8,000 c.s. or less (under the condition of 5°C) and, therefore, an emulsified composition having a good spread and a good usability can be prepared.

[0025]

As such, in the emulsified composition of the present invention, it is possible to form a stable emulsified system even under the state of containing no nonionic surface-active agent and, therefore, the product has a high safety and is suitable as a substrate material for cosmetics and medicaments for external application to the skin.

[0026]

Besides the above-mentioned components, it is also possible to use optional components which are commonly compounded in cosmetics and medicaments

for external application to the skin such as ethanol, thickener such as Carbopol, antiseptic agent, ultraviolet absorber, antioxidant, dye, powder, etc. In the case of medicaments for external application to the skin, it is further possible to compound an effective ingredient such as antifungal, anti-inflammatory agent, steroid, anti-itching agent, antibiotic substance, etc. The emulsified composition of the present invention may be manufactured by treating those components according to conventional methods.

[0027]

There is no particular limitation for the preparation form for the cosmetic of the present invention and its specific examples are cream, milky lotion, oil, lotion, ointment, pack, aqueous gel, oily gel and bathing agent. When percutaneous absorbance is taken into consideration, the preferred preparation forms are cream, milky lotion and oil. In the case of medicaments for external application to the skin, it can be also used widely in a form of ointment, cream, etc.

[0028]

[Examples]

The present invention will now be illustrated in more detail by way of the following Examples although it goes without saying that the present invention is not limited to those Examples only.

[0029]

<Example 1>

A cosmetic 1 (milky lotion) which is an emulsified composition of the present invention was manufactured according to the formulation as shown in the following Table 2. Thus, each of the components (a) and (b) was heated at 80°C, (b) was gradually added to (a) with stirring to emulsify and the mixture was treated with a homogenizer to homogenize the emulsified particles and then cooled to give an emulsified composition.

[0030]

In the meanwhile, manufacture of an emulsion was tried where Pemrene TR-2 was substituted with carboxyvinyl polymer as Comparative Example 1 but emulsification was not possible. Further, in the case of an emulsion of Comparative Example 2 where Pemrene TR-2, potassium hydroxide and 1 part by weight of water were substituted with polyoxyethylene (20) stearyl ether, it was separated within 24 hours after being emulsified at room temperature.

[0031]

After emulsifying the cosmetic 1, it was allowed to stand at room temperature for 24 hours, charged in a preserving bottle and preserved for 24 hours under the following temperature conditions and viscosities measured were as follows. Thus, 4820 at 5°C, 2800 at 20°C and 2000 at 40°C (unit: c. s.). This cosmetic was stable even when preserved for 10 days under the condition of as severe as 50°C. It is therefore noted that, when an ether comprising polyhydric alcohol and unsaturated higher alcohol and a high-molecular substance having an alkyl group on the side chain are jointly used in the emulsified composition of the present invention, an advantage of low viscosity and good stability can be achieved and a high-molecular substance having an alkyl group on the side chain is a preferred component.

[0032]

When the cosmetic 1 and the milky lotion of Comparative Example 2 were compared in terms of their whitening effect by an evaluation method of the following Table 1, the result was + in Comparative Example 2 while, in the cosmetic 1, it was ++ whereby it was noted that the whitening effect was further enhanced when a nonionic surface-active agent was not used and a system where emulsification was conducted by a high-molecular substance having an alkyl group on the side chain was used.

[0033]

Table 1

++:	very white
+:	clearly white
±:	slightly white
-:	not white

[0034]

Thus, 4 sites of human forearm (2 cm × 2 cm) were irradiated with ultraviolet ray (light source: SE Lamp manufactured by Toshiba) which was 0.5-fold of MED previously measured in a frequency of once daily for 3 days to prepare a turning model. One of the four turned models as such was applied with the cosmetic 1 of the present invention, another thereof was applied with the cosmetic of Comparative Example 1 and still another thereof was applied with a cosmetic of Control Example 1 in an amount of 0.01 ml/day for three weeks each while the residual one site was not applied with any of them at all (non-treated). Then degree of coloration was observed after 24 hours from the last application and the whitening effect in each site as compared with the degree of coloration of the non-treated site was evaluated according to the standard mentioned in the above Table 1.

[0035]

Table 2

(a)	Jojoba alcohol	0.5% by weight
	Cetanol	0.5% by weight
	Glycerol α -monooleyl ether	0.3% by weight
	Jojoba oil	1.7% by weight
	Methyl phenyl polysiloxane	1% by weight
	Butyl paraben	0.1% by weight
	4-n-Butylresorcinol	0.1% by weight
(b)	1,3-Butanediol	8% by weight
	Alkyl acrylate/methacrylate copolymer (Pemrene TR-2)	0.2% by weight
	Potassium hydroxide	0.1% by weight
	Maltotriose	0.2% by weight
	Water	87.3% by weight

[0036]

Then an antibacterial test was carried out in such a manner that the cosmetic 1 (0.1 ml) as a sample was smeared on an agar plate medium, microbe was inoculated using a platinum loop and state of growth of the microbe was checked. On the seventh day from the inoculation of the microbe, no formation of colony was noted in any of the cases where

Staphylococcus aureus, *Pseudomonas aeruginosa* and *Candida albicans* were inoculated.

[0037]

<Example 2>

A cosmetic 2 (milky lotion) which is an emulsified composition of the present invention was manufactured according to the formulation as shown in the following Table 3. Thus, each of the components (a) and (b) was heated at 80°C, (b) was gradually added to (a) with stirring to emulsify and the mixture was treated with a homogenizer to homogenize the emulsified particles and then cooled to give an emulsified composition.

[0038]

In the meanwhile, manufacture of an emulsion was tried where Pemrene TR-2 was substituted with carboxyvinyl polymer as Comparative Example 3 but emulsification was not possible. Further, in the case of an emulsion of Comparative Example 4 where Pemrene TR-2, potassium hydroxide and 1 part by weight of water were substituted with polyoxyethylene (20) stearyl ether, it was separated within 24 hours after being emulsified at room temperature.

[0039]

After emulsifying the cosmetic 2, it was allowed to stand at room temperature for 24 hours, charged in a preserving bottle and preserved for 24 hours under the following temperature conditions and viscosities measured were as follows. Thus, 4800 at 5°C, 2910 at 20°C and 2000 at 40°C (unit: c. s.). This cosmetic was stable even when preserved for 10 days under the condition of as severe as 50°C. It is therefore noted that, when a high-molecular substance having an alkyl group on the side chain is used in the emulsified composition of the present invention, an advantage of low viscosity and good stability can be achieved.

[0040]

Table 3

(a)	Jojoba alcohol	0.5% by weight
	Cetanol	0.5% by weight
	Glycerol α -monooleyl ether	0.5% by weight
	Jojoba oil	1.7% by weight
	Methyl phenyl polysiloxane	1% by weight
	Butyl paraben	0.1% by weight
	4-n-Butylresorcinol	0.5% by weight
(b)	1,3-Butanediol	8% by weight
	Alkyl acrylate/methacrylate copolymer (Pemrene TR-2)	0.2% by weight
	Potassium hydroxide	0.1% by weight
	Maltotriose	0.2% by weight
	Water	86.7% by weight

[0041]

<Example 3>

A cosmetic 3 (milky lotion) which is an emulsified composition of the present invention was manufactured according to the formulation as shown in the following Table 4. Thus, each of the components (a) and (b) was heated at 80°C, (b) was gradually added to (a) with stirring to emulsify and the mixture was treated with a homogenizer to homogenize the emulsified particles and then cooled to give an emulsified composition. In the meanwhile, manufacture of an emulsion was tried where Pemrene TR-2 was substituted with carboxyvinyl polymer as Comparative Example 5 but emulsification was not possible. Further, in the case of an emulsion of Comparative Example 6 where Pemrene TR-2, potassium hydroxide and 1 part by weight of water were substituted with polyoxyethylene (20) stearyl ether, it was separated within 24 hours after being emulsified at room temperature.

[0042]

After emulsifying the cosmetic 3, it was allowed to stand at room temperature for 24 hours, charged in a preserving bottle and preserved for 24 hours at 20°C and the viscosity measured was 1960 (unit: c. s.). This cosmetic was stable even when preserved for 10 days under the condition of

as severe as 50°C. It is therefore noted that, when a high-molecular substance having an alkyl group on the side chain is used in the emulsified composition of the present invention, an advantage of low viscosity and good stability can be achieved.

[0043]

Table 4

(a)	Jojoba alcohol	0.5% by weight
	Cetanol	0.5% by weight
	Glycerol α -monooleyl ether	0.5% by weight
	Jojoba oil	1.7% by weight
	Methyl phenyl polysiloxane	1% by weight
	Butyl paraben	0.1% by weight
	4-n-Butylresorcinol	1% by weight
(b)	1,3-Butanediol	8% by weight
	Alkyl acrylate/methacrylate copolymer (Pemrene TR-2)	0.15% by weight
	Potassium hydroxide	0.05% by weight
	Maltotriose	0.2% by weight
	Water	86.3% by weight

[0044]

<Example 4>

A cosmetic 4 (milky lotion) which is an emulsified composition of the present invention was manufactured according to the formulation as shown in the following Table 5. Thus, each of the components (a) and (b) was heated at 80°C, (b) was gradually added to (a) with stirring to emulsify and the mixture was treated with a homogenizer to homogenize the emulsified particles and then cooled to give an emulsified composition. In the meanwhile, manufacture of an emulsion was tried where Pemrene TR-1 was substituted with carboxyvinyl polymer as Comparative Example 7 but emulsification was not possible. Further, in the case of an emulsion of Comparative Example 8 where Pemrene TR-1, potassium hydroxide and 1 part by weight of water were substituted with polyoxyethylene (20) stearyl ether, it was separated within 24 hours after being emulsified at room temperature.

[0045]

This cosmetic 4 was stable even when preserved for 10 days under the condition of as severe as 50°C. It is therefore noted that, when a high-molecular substance having an alkyl group on the side chain is used in the emulsified composition of the present invention, an advantage of good stability can be achieved.

[0046]

Table 5

(a)	Jojoba alcohol	0.5% by weight
	Cetanol	0.5% by weight
	Glycerol α -monooleyl ether	0.3% by weight
	Jojoba oil	1.7% by weight
	Methyl phenyl polysiloxane	1% by weight
	Butyl paraben	0.1% by weight
	4-n-Butylresorcinol	0.1% by weight
(b)	1,3-Butanediol	8% by weight
	Alkyl acrylate/methacrylate copolymer (Pemrene TR-1)	0.2% by weight
	Potassium hydroxide	0.1% by weight
	Maltotriose	0.2% by weight
	Water	87.4% by weight

[0047]

<Example 5>

A cosmetic 5 (milky lotion) which is an emulsified composition of the present invention was manufactured according to the formulation as shown in the following Table 6. Thus, each of the components (a) and (b) was heated at 80°C, (b) was gradually added to (a) with stirring to emulsify and the mixture was treated with a homogenizer to homogenize the emulsified particles and then cooled to give an emulsified composition. In the meanwhile, manufacture of an emulsion was tried where Pemrene TR-2 was substituted with carboxyvinyl polymer as Comparative Example 9 but emulsification was not possible. Further, in the case of an emulsion of

Comparative Example 10 where Pemrene TR-2, potassium hydroxide and 2 parts by weight of water were substituted with polyoxyethylene (60) hydrogenated castor oil, it was separated within 24 hours after being emulsified at room temperature.

[0048]

This cosmetic 5 was stable even when preserved for 10 days under the condition of as severe as 50°C. It is therefore noted that, when a high-molecular substance having an alkyl group on the side chain is used in the emulsified composition of the present invention, an advantage of good stability can be achieved.

[0049]

Table 6

(a)	Jojoba alcohol	0.5% by weight
	Cetanol	0.5% by weight
	Glycerol β -monooleyl ether	0.3% by weight
	Jojoba oil	1.7% by weight
	Methyl phenyl polysiloxane	1% by weight
	Butyl paraben	0.1% by weight
	4-n-Butylresorcinol	0.1% by weight
(b)	1,3-Butanediol	8% by weight
	Alkyl acrylate/methacrylate copolymer (Pemrene TR-2)	0.2% by weight
	Potassium hydroxide	0.1% by weight
	Maltotriose	0.2% by weight
	Water	87.4% by weight

[0050]

<Example 6>

A cosmetic 6 (milky lotion) which is an emulsified composition of the present invention was manufactured according to the formulation as shown in the following Table 7. Thus, each of the components (a) and (b) was heated at 80°C, (b) was gradually added to (a) with stirring to emulsify and the mixture was treated with a homogenizer to homogenize the emulsified

particles and then cooled to give an emulsified composition. In the meanwhile, manufacture of an emulsion was tried where Pemrene TR-2 was substituted with carboxyvinyl polymer as Comparative Example 11 but emulsification was not possible. Further, in the case of an emulsion of Comparative Example 12 where Pemrene TR-2, potassium hydroxide and 2 parts by weight of water were substituted with polyoxyethylene (45) stearyl ether, it was separated within 24 hours after being emulsified at room temperature.

[0051]

This cosmetic 6 was stable even when preserved for 10 days under the condition of as severe as 50°C. It is therefore noted that, when a high-molecular substance having an alkyl group on the side chain is used in the emulsified composition of the present invention, an advantage of good stability can be achieved.

[0052]

Table 7

(a)	Jojoba alcohol	0.5% by weight
	Cetanol	0.5% by weight
	Glycerol β -monooleyl ether	0.3% by weight
	Jojoba oil	1.7% by weight
	Methyl phenyl polysiloxane	1% by weight
	Butyl paraben	0.1% by weight
	4-n-Butylresorcinol	0.1% by weight
(b)	1,3-Butanediol	8% by weight
	Alkyl acrylate/methacrylate copolymer (Pemrene TR-2)	0.2% by weight
	Potassium hydroxide	0.1% by weight
	Maltotriose	0.2% by weight
	Water	87.4% by weight

[0053]

<Example 7>

A cosmetic 7 (milky lotion) which is an emulsified composition of the present

invention was manufactured according to the formulation as shown in the following Table 8. Thus, each of the components (a) and (b) was heated at 80°C, (b) was gradually added to (a) with stirring to emulsify and the mixture was treated with a homogenizer to homogenize the emulsified particles and then cooled to give an emulsified composition. In the meanwhile, manufacture of an emulsion was tried where Pemrene TR-2 was substituted with carboxyvinyl polymer as Comparative Example 13 but emulsification was not possible. Further, in the case of an emulsion of Comparative Example 14 where Pemrene TR-2, potassium hydroxide and 2 parts by weight of water were substituted with polyoxyethylene (20) oleyl ether, it was separated within 24 hours after being emulsified at room temperature.

[0054]

This cosmetic 7 was stable even when preserved for 10 days under the condition of as severe as 50°C. It is therefore noted that, when a high-molecular substance having an alkyl group on the side chain is used in the emulsified composition of the present invention, an advantage of good stability can be achieved.

[0055]

Table 8

(a)	Jojoba alcohol	0.5% by weight
	Cetanol	0.5% by weight
	Glycerol α,β -dioleyl ether	0.3% by weight
	Jojoba oil	1.7% by weight
	Methyl phenyl polysiloxane	1% by weight
	Butyl paraben	0.1% by weight
	4-n-Butylresorcinol	0.1% by weight
	1,3-Butanediol	8% by weight
(b)	Alkyl acrylate/methacrylate copolymer (Pemrene TR-2)	0.2% by weight
	Potassium hydroxide	0.1% by weight
	Maltotriose	0.2% by weight
	Water	87.3% by weight

[0056]

<Example 8>

A cosmetic 8 (milky lotion) which is an emulsified composition of the present invention was manufactured according to the formulation as shown in the following Table 9. Thus, each of the components (a) and (b) was heated at 80°C, (b) was gradually added to (a) with stirring to emulsify and the mixture was treated with a homogenizer to homogenize the emulsified particles and then cooled to give an emulsified composition. In the meanwhile, manufacture of an emulsion was tried where Pemrene TR-2 was substituted with carboxyvinyl polymer as Comparative Example 15 but emulsification was not possible. Further, in the case of an emulsion of Comparative Example 16 where Pemrene TR-2, potassium hydroxide and 1 part by weight of water were substituted with polyoxyethylene (20) behenyl ether, it was separated within 24 hours after being emulsified at room temperature.

[0057]

This cosmetic 8 was stable even when preserved for 10 days under the condition of as severe as 50°C. It is therefore noted that, when a high-molecular substance having an alkyl group on the side chain is used in the emulsified composition of the present invention, an advantage of good stability can be achieved.

[0058]

Table 9

(a)	Jojoba alcohol	0.5% by weight
	Cetanol	0.5% by weight
	Diethylene glycol monooleyl ether	0.3% by weight
	Jojoba oil	1.7% by weight
	Methyl phenyl polysiloxane	1% by weight
	Butyl paraben	0.1% by weight
	4-n-Butylresorcinol	0.1% by weight
(b)	1,3-Butanediol	8% by weight
	Alkyl acrylate/methacrylate copolymer (Pemrene TR-2)	0.2% by weight
	Potassium hydroxide	0.1% by weight
	Maltotriose	0.2% by weight
	Water	87.3% by weight

[0059]

<Example 9>

Usability of the cosmetics of Examples 1 to 8 at 5°C was checked by professional panelists. Usability was checked for the items of good spread, close adhesion feel and good compatibility to skin according to the evaluation standards as shown in the following Table 10.

[0060]

Table 10

++:	very good
+:	good
±:	a bit good
-:	bad

[0061]

The result is shown in Table 11. It is noted therefrom that the cosmetics of the present invention have a low viscosity even at low temperature, the spread is good and close adhesion feel to and compatibility with the skin are very good.

[0062]

Table 11

Sample Used	Good Spread	Close Adhesion Feel	Good Compatibility to the Skin
Ex. 1	++	++	++
Ex. 2	++	++	++
Ex. 3	++	++	++
Ex. 4	++	++	++
Ex. 5	++	++	++
Ex. 6	++	++	++
Ex. 7	++	++	++
Ex. 8	++	++	++

[0063]

<Example 10>

Safety of the cosmetics of Examples 1 to 8 was checked using skin-injured models of guinea pigs (5 in one group). Hair on the back of the guinea pigs was shaved, a rubber tape stripping was conducted and a close patch test was carried out for 48 hours. After removal of the patch, the skin reaction was evaluated by the so-called standard by Draze as shown in the following Table 12.

[0064]

Table 12

++:	reaction accompanied by edema
+:	reaction accompanied by apparent erythema
±:	reaction accompanied by slight erythema
-:	no reaction

[0065]

The result was "no reaction" "(-)" in all cases whereby the high safety of the cosmetics of the present invention was ascertained.

[0066]

<Example 11>

A medicament 1 (milky lotion) for external application to the skin which was an emulsified composition of the present invention was manufactured according to the formulation as shown in the following Table 13. Thus, each of the components (a) and (b) was heated at 80°C, (b) was gradually added to (a) with stirring to emulsify and the mixture was treated with a homogenizer to homogenize the emulsified particles and then cooled to give an emulsified composition. The resulting composition showed a very good spread and gave little detachment from the skin whereby it was a very good substrate material for medicaments. A non-preferred action (physical irritation) by application in the damaged skin in the use of anti-inflammatory agent was

suppressed. In addition, as a result of the antibacterial action of the resorcinol derivative, it was stable to microbes.

[0067]

Table 13

(a)	Jojoba alcohol	0.5 part by weight
	Cetanol	0.5 part by weight
	Glycerol α -monooleyl ether	0.3 part by weight
	Jojoba oil	1.7 parts by weight
	Methyl phenyl polysiloxane	1 part by weight
	4-n-Butylresorcinol	0.1 part by weight
	Suprofen	1 part by weight
(b)	1,3-Butanediol	8 parts by weight
	Alkyl acrylate/methacrylate copolymer (Pemrene TR-2)	0.2 part by weight
	Potassium hydroxide	0.1 part by weight
	Maltotriose	0.2 part by weight
	Water	86.4 parts by weight

[0068]

<Example 12>

A medicament 2 (milky lotion) for external application to the skin which was an emulsified composition of the present invention was manufactured according to the formulation as shown in the following Table 14. Thus, each of the components (a) and (b) was heated at 80°C, (b) was gradually added to (a) with stirring to emulsify and the mixture was treated with a homogenizer to homogenize the emulsified particles and then cooled to give an emulsified composition. The resulting composition showed a very good spread and gave little detachment from the skin whereby it was a very good substrate material for medicaments. A non-preferred action (physical irritation) by application in the inflamed skin in the use of antifungal agent was suppressed. In addition, as a result of the antibacterial action of the resorcinol derivative, no deposition of dyes was noted in the skin after recovery from inflammation.

[0069]

Table 14

(a)	Jojoba alcohol	0.5 part by weight
	Cetanol	0.5 part by weight
	Glycerol α -monooleyl ether	0.3 part by weight
	Jojoba oil	1.7 parts by weight
	Methyl phenyl polysiloxane	1 part by weight
	Butyl paraben	0.1 part by weight
	Terbinafine	1 part by weight
	4-n-Butylresorcinol	0.1 part by weight
(b)	1,3-Butanediol	8 parts by weight
	Alkyl acrylate/methacrylate copolymer (Pemrene TR-2)	
		0.2 part by weight
	Potassium hydroxide	0.1 part by weight
	Maltotriose	0.2 part by weight
	Water	86.3 parts by weight

[0070]

The emulsified composition of the present invention has good whitening effect, antibacterial action, etc. of the resorcinol derivative. The emulsified composition of the present invention has a good stability even by the non-use of nonionic surface-active agent. Since the emulsified composition of the present invention is able to manufacture a preparation having a good stability even in the case of a composition with a low viscosity, it is now possible to provide an emulsified composition having good spread and good usability. In accordance with the present invention, it is possible to provide a preparation containing no nonionic surface-active agent and having a sufficient stability which is suitable for the manufacture of cosmetics and medicament for external use to the skin containing a resorcinol derivative.

[End]